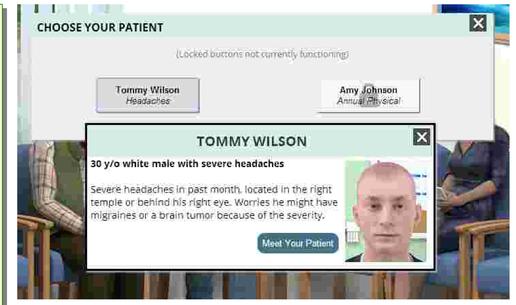
Clinical Challenge: Alcohol -

A Game to Teach Alcohol-related Clinical Skills to Medical Students

Bradley Tanner, MD, Mary Metcalf, PhD, MPH, Brian Tanner, Clinical Tools, Inc., Chapel Hill, NC

Problem Statement: Medical students receive inadequate training in alcohol screening, assessment, and intervention despite the high cost of alcohol use to individuals and society. The topic is often covered very superficially in medical school and does not lend itself to standard training approaches. The packed medical school curriculum makes it difficult to add the topic to existing training, thus a solution which can be easily inserted was essential. Finally, the topic is often not perceived as interesting by students so a novel approach which makes the topic more exciting and challenging is essential to establishing enthusiasm.

Short Description: With NIH/NIAAA funding (SBIR Grant # 1R43AA020456-01A1) we created and evaluated a tablet based prototype game called *Clinical Challenge: Alcohol* that teaches alcohol-related clinical skills to medical students. The game's purpose is to supplement the currently inadequate training that students receive in terms of alcohol screening, assessment, and intervention - despite the well known morbidity and mortality of alcohol use and its impact on society. We embarked on an agile development process utilizing frequent input, short development sprints, and improvements tied to user input. Surveys of users demonstrated that the final game closely met student needs and was well accepted.

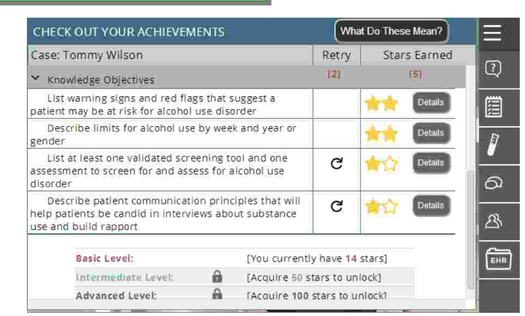


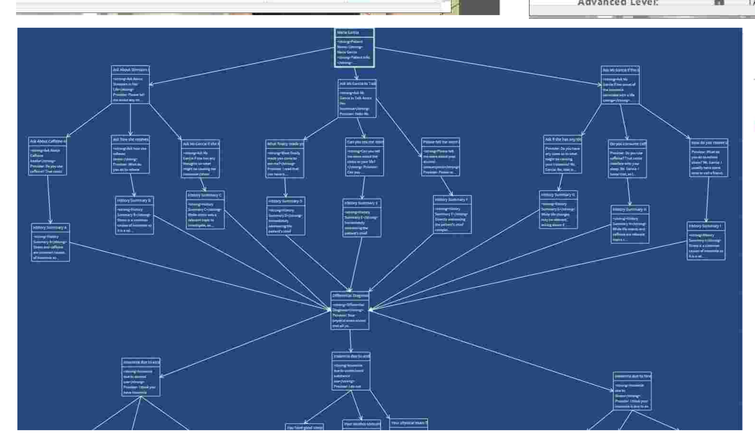
Approach: In the game, medical student players assess and intervene with 3D simulated patients having common alcohol use challenges, from at-risk drinking to chronic addiction. During time-pressured encounters, learners make clinical decisions via a branched path game. They experience realistic patient responses based on their decisions, achieve game points for using evidence-based, patient-centered approaches, receive feedback from simulated faculty, and follow patients over time.

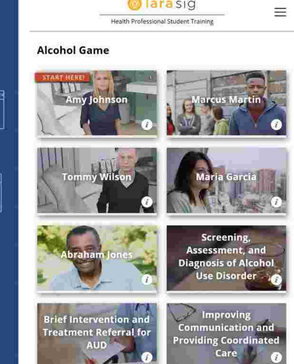
After completing a needs analysis with students and their preceptors, we conducted iterative internal heuristic usability testing, followed by usability/alpha testing with students. This preliminary work improved the prototype, instructions, and content. Medical students and recent medical school graduates participated in additional testing to guide further development.

Lessons Learned: Regular and structured feedback for the user was found to be essential as we created the game. Needs analysis and end-user focused curriculum development indicate that the content was well organized and appropriate. Participants were satisfied with the design and rated the EHR interface highly. Usability test results confirmed the overall usability of the prototype, and specific usability weaknesses led to further improvements. Repeated usability assessment and revision of the game ensured that participants felt it was clear how to use the game and found it easy to use. In sum, the agile process led to a solution where learners were able to complete requested tasks quickly, felt learning could occur, and, would recommend the game to others.

Significance: Serious games can enhance interest and convey skills to medical students. Agile development techniques using regular and consistent feedback and input interspersed with development sprints offer a successful and rapid alternative to the more traditional waterfall approach which requires a long period of planning followed by development. Our final result was tuned to the target audience and well received. Games can and will be powerful tools to teach medical content and enhance current curricula, especially in areas that traditional curriculum has overlooked, such as alcohol use disorders and related topics.







Suggested Citation & Communication

Tanner B, Metcalf M, Tanner B. Clinical Challenge: Alcohol - A Game to Teach Alcohol-related Clinical Skills to Medical Students. Poster presented at the 2015 AAMC Medical Education Meeting November 10, 2015, Baltimore, MD.

Contact Author: **bradtanner@gmail.com**

Acknowledgments & Disclosure

The research was funded entirely by the NIAAA/NIH (award #2R44AA020456-02, *Game-based Skills Development in Alcohol Assessment and Intervention,* Mary Metcalf, PI). The Clinical Tools, Inc. IRB reviewed and approved the research.

B Tanner, MD, Co-Investigator. Clinical Tools, Inc is 100% owned by Bradley Tanner, MD and he serves as President of Clinical Tools, Inc.

References

Wyatt SA, Vilensky W, Manlandro JJ, Dekker MA. Medical education in substance abuse: from student to practicing osteopathic physician. J Am Osteopath Assoc. 2005:18-25.

Fleming M, Olsen D, Stathes H, Boteler L, Grossberg P, Pfeifer J, Schiro S, Banning J, Skochelak S. Virtual Reality Skills Training for Health Care Professionals in Alcohol Screening and Brief Intervention. J Am Board Fam Med. 2009:387-98. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2709742/. Accessed on: 4/4/2014.

Graafland M, J.M. Schraagen, and M.P. Schijven. Systematic Review of Serious Games for Medical Education and Surgical Skills Training. British Journal of Surgery. 2012:1322–1330. http://onlinelibrary.wiley.com/doi/10.1002/bjs.8819/pdf. Accessed on: 6/25/13.

Dunne JR, McDonald CL. Pulse!!: a model for research and development of virtual-reality learning in military medical education and training. Mil Med. 2010:25-7. http://www.ncbi.nlm.nih.gov/pubmed/23634475. Accessed on: 4/4/2014.

Kron, Frederick W. et al. Medical Student Attitudes Toward Video Games and Related New Media Technologies in Medical Education. BMC Medical Education. 2010:50. http://www.biomedcentral.com/1472-6920/10/50. Accessed on: 6/25/13. PMID: 20576125